

Google “energy for neuron firing” and you get:

*In final, the energy supply to a neuron by ATP during one action potential is
 $2.468 \times 10^{-7} J$*

This means that assuming the brain is drawing 20W, that's 81M firing events per second.

Assuming each neuron has a fan-out of 1000, aka 1000 MACs, that's 2000 FLOPS per neuron. That's only 162 GFLOPS...to be fair, they are sparse. But a far cry from 20 PFLOPS, the classic estimate of brain compute. Even assuming they use 1% 1's, that's still only 16 TFLOPS.

Maybe a 3090 is already a human brain.